USER INTERFACE METHODS, SUCH AS FOR CUSTOMER SELF-SUPPORT ON A MOBILE DEVICE

CROSS-REFERENCE TO RELATED APPLICATION(S)

[0001]   This application claims the benefit of U.S. Provisional Patent Application No. 60/546,687, filed February 20, 2004, entitled CALL INTERCEPT METHODS FOR CUSTOMER SELF SUPPORT AND METHODS FOR NAVIGATING DATA SCREENS, U.S. Provisional Patent Application No. 60/590,152, filed July 21, 2004, entitled MOBILE DEVICE ASSISTANCE, MOBILE DEVICE MANAGEMENT, AND CALL INTERCEPTOR FOR MOBILE DEVICES, U.S. Provisional Patent Application No. 60/611,607, filed September 21, 2004, entitled SECURE MOBILE DEVICE SOFTWARE EXECUTION, HELP-SUPPORT-CARE INITIATION FOR MOBILE DEVICES, AND SMART NETWORK CONFIGURATION SELECTION FOR MOBILE DEVICES, and U.S. Provisional Patent Application No. _____, filed February 11, 2005, entitled CALL INTERCEPT METHODS, SUCH AS FOR CUSTOMER SELF-SUPPORT ON A MOBILE DEVICE (attorney docket number 41658.8001).

BACKGROUND

[0002]   Current methods for providing technical support to a mobile device often require a subscriber to diagnose and to correct mobile device settings, configurations, and preferences on their own. This often requires a large degree of input from the subscriber and may decrease efficiency in the time it takes for a user to identify and to correct technical issues on their mobile device. Subscribers may be required to contact the network from their mobile device to retrieve updated mobile device configurations or settings. This may congest the network and may increase the time it takes to receive the correct mobile device configurations and settings. In some instances, the mobile device itself may attempt to provide training to the subscriber. However, the training may often be presented at the wrong times and may not necessarily assist the subscriber in resolving setting and configuration issues. The

training may not prompt the subscriber at appropriate times with training. In addition, a subscriber attempting to use an application running on their mobile device for the first time may become frustrated by the lack of training for first time use.

[0003]   Problems also exist with accessing customer support features. For example, a subscriber may need to dial a customer support number to access customer support. This often requires that the subscriber remember certain customer support numbers (e.g., "611") and that the subscriber wait for prolonged periods of time to complete customer support calls. In addition, customer support solutions may need to be retrieved from a network, congesting the network and increasing the time it takes to receive customer support solutions.

[0004]   Problems associated with navigating screens on a mobile device also exist. A subscriber may typically attempt to navigate screens by using a touch screen. Using a touch screen often requires a large amount of scrolling and a large number of keystrokes pressed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005]   Figure 1 is a schematic diagram illustrating a mobile device on which call intercept methods, customer self-support, and other functions can be accessed via various user interfaces.

[0006]   Figure 2 is a schematic diagram illustrating a system architecture for implementing call intercept methods and customer self-support.

[0007]   Figure 3 is a flow diagram illustrating a routine for altering display elements on the mobile device.

[0008]   Figure 4 is a diagram illustrating mobile device screen features that allow for superimposing branding onto background images or dynamically layered over the screen during specific modes, and for displaying multiple time zones.

[0009]   Figure 5A is a diagram illustrating a mobile device screen feature that allows the mobile device to display a dynamic list of user interface features.

[0010]   Figure 5B is a diagram illustrating a mobile device screen feature that allows the mobile device to display a notification pane in response to certain events.

[0011]   Figures 6A through 6C illustrate display screens for three different levels of service for three different groups of subscribers.

[0012]   Figures 7A through 7C are display screens that illustrate how the mobile device application can automatically detect and correct for roaming on the subscriber's mobile device.

[0013]   Figure 8 is a mobile device display screen illustrating a proactive notification message to a subscriber regarding network changes.

[0014]   Figure 9 is a flow diagram illustrating a method for automatically selecting a network access configuration based on a connected network ID.

[0015]   Figure 10 is a diagram illustrating a mobile device screen feature that allows the mobile device to display an action ribbon for navigating data screens.

[0016]   Figure 11 is a diagram illustrating a mobile handset with a built-in customer care button.

[0017]   The headings provided herein are for convenience only and do not necessarily affect the scope or meaning of the claimed invention.

[0018]   In the drawings, the same reference numbers and acronyms identify elements or acts with the same or similar functionality for ease of understanding and convenience. To easily identify the discussion of any particular element or act, the most significant digit or digits in a reference number refer to the Figure number in which that element is first introduced (e.g., element 604 is first introduced and discussed with respect to Figure 6).

[0019]   A portion of this disclosure contains material to which a claim for copyright is made. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or patent disclosure (including the Figures) as it appears in the Patent and Trademark Office patent file or records, but the copyright owner reserves all other copyright rights whatsoever.

DETAILED DESCRIPTION

[0020]   The invention will now be described with respect to various embodiments. The following description provides specific details for a thorough understanding of, and

enabling description for, these embodiments of the invention. However, one skilled in the art will understand that the invention may be practiced without these details. In other instances, well-known structures and functions have not been shown or described in detail to avoid unnecessarily obscuring the description of the embodiments of the invention.

[0021]   It is intended that the terminology used in the description presented below be interpreted in its broadest reasonable manner, even though it is being used in conjunction with a detailed description of certain specific embodiments of the invention. . Certain terms may even be emphasized below; however, any terminology intended to be interpreted in any restricted manner will be overtly and specifically defined as such in this Detailed Description section.

Suitable System

[0022]   Figure 1 illustrates a mobile device 100 on which user interface methods can be implemented in accordance with several embodiments of the invention. A receiver/demodulator 104 receives a transmitted signal via an antenna 102 and reconstructs the original transmitted signal.   The transmitted signal is sent to a microcontroller 106, which consists of a decoder 108, a processor 112, and RAM (Random Access Memory) 114.   The decoder 108 translates the signals into meaningful data and interfaces to other devices. Decoded data, along with subscriber inputs 110, are sent to the processor 112. In addition, the mobile device may include optional components, such as an automated data collection 120 unit linked to the processor 112, which can include an automated RFID (Radio Frequency Identification) tag reader, a magnetic card swipe reader, a bar code reader, and others. Additionally, or alternatively, the mobile device may include a biometric reader (e.g., thumbprint reader, voice fingerprint recognition functionality, etc.), and/or a media output device (e.g., MP3 player, television tuner/player, etc.) 120. The mobile device may also include a subscriber identity module (SIM) 122. The output of the processor 112 can be stored in a programmable non-volatile memory 116 or in the RAM memory 118.

[0023]   Figure 2 illustrates a system architecture for implementing call intercept methods and customer self-support, which may be accessed or enjoyed by user interface methods described below.   The system architecture includes three

components: handset-based services 200, the mobile device 100, and network-based services 204. Figure 1 and the discussion herein provide a brief, general description of a suitable telecommunications or computing environment in which the invention can be implemented. Although not required, aspects of the invention are described in the general context of computer-executable instructions, such as routines executed by a general-purpose computer, e.g., mobile device, a server computer, or personal computer. Those skilled in the relevant art will appreciate that the invention can be practiced with other communications, data processing, or computer system configurations, including: Internet appliances, hand-held devices (including personal digital assistants (PDAs)), wearable computers, all manner of cellular or mobile phones, multi-processor systems, microprocessor-based or programmable consumer. electronics, set-top boxes, network PCs, mini-computers, mainframe computers, and the like. Indeed, the terms "computer," "host," and "host computer," and "mobile device" and "handset" are generally used interchangeably herein, and refer to any of the above devices and systems, as well as any data processor.

[0024]   Aspects of the invention can be embodied in a special purpose computing device or data processor that is specifically programmed, configured, or constructed to perform one or more of the computer-executable instructions explained in detail herein. Aspects of the invention may also be practiced in distributed computing environments where tasks or modules are performed by remote processing devices, which are linked through a communications network, such as a Local Area Network (LAN), Wide Area Network (WAN), or the Internet. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

[0025]   Aspects of the invention may be stored or distributed on computer-readable media, including magnetically or optically readable computer discs, hard-wired or preprogrammed chips (e.g., EEPROM semiconductor chips), nanotechnology memory, biological memory, or other data storage media. Indeed, computer implemented instructions, data structures, screen displays, and other data under aspects of the invention may be distributed over the Internet or over other networks (including wireless networks), on a propagated signal on a propagation medium (e.g., an electromagnetic wave(s), a sound wave, etc.) over a period of time, or they may be provided on any analog or digital network (packet switched, circuit switched, or other.

scheme). Those skilled in the relevant art will recognize that portions of the invention reside on a server computer, while corresponding portions reside on a client computer such as a mobile or portable device, and thus, while certain hardware platforms are described herein, aspects of the invention are equally applicable to nodes on a network.

[0026]   The handset-based services 200 may include executable software, software configurations, hardware configurations and controls, and handset operating system interfaces. As disclosed herein, executable software may include, without limitation, any software program stored on the mobile device or associated memory device, both permanently and temporarily connected via hardware or wireless connectivity. The mobile device 100 may include an authentication system 208 (e.g., via a SIM), a hardware interface 210, a report system 212, a script interface 214, a script platform 216, data 218, and scripts 220. The network-based services 204 may include a network or networks 206, mobile network services 222, a mobile network operator customer service system 224, a host information management system 226, updated scripts 228, and report data 230. The components of the mobile device 100 and the network-based services 204 will be described below.

[0027]   The components within the mobile device 100 allow the device to integrate both handset-based services 200 and network-based services 204. The authentication system 208 can implement SIM (Subscriber Identity Module) card-based or standalone authentication to meet network requirements for desired levels of security. Authenticating a system to meet network requirements may not be required but is often recommended.

[0028]   The hardware interface 210 may retrieve hardware interface elements required for interfacing with network or phone-based customer support services. Examples of hardware interface elements include changing volume, changing frequency, retrieving SIM (Subscriber Identity Module) ID, connection status from the SIM or radio hardware, and others. The report system 212 may collect and forward the data reported by the mobile device to the network 206. The report system 212 can also encrypt the handset identification information to provide increased security. The

information can be encoded so that only the host information management system 226 can decipher the handset identification information.

[0029]   The script interface 214 serves as a standard application programming interface for customer support services.   More specifically, the script interface 214 provides an interface between scripts 220 and the various hardware-specific and executable, program-specific functions.   The script interface 214 allows a single customer service script to be deployed across multiple operating systems and hardware configurations.   In addition, the script interface 214 includes a standard API (Application Programming Interface) for both the hardware/OS side and the script interface.

[0030]   The script platform 216 can mix and match calls through the script interface to acquire information, to change or correct settings on the phone, and to perform additional functions as described below.   The script platform 216 authenticates, runs, and updates all scripts 220, manages reporting updates and changes, communicates with the host information management system 226, communicates with the GUI (Graphical User Interface), and manages customer surveys and interviews.   The host · information management system 226 can push a notification to the script platform 216 via USSD (Unstructured Supplementary Services Data), SMS (Short Message Service), IP (Internet Protocol), or any other network connectivity that the mobile device supports.   The script platform 216 can run the scripts 220 after authentication, and the scripts 220 can be authenticated to the network 206 or to the phone.

[0031]   The components within the network-based services 204 allow the mobile device 100 to communicate with and to retrieve data from the network 206.   The network-based services 204 may include wired and wireless systems.   The mobile network services 222 may consist of one or more systems including billing, CRM (Customer Relationship Management), provisioning, and others.   Furthermore, mobile network services 222 are able to return data calls made by mobile devices via standard network protocols (e.g., IP, DTMF (Dual-Tone Multi-Frequency), SMS, USSD, etc.).

[0032]   The mobile network operator customer service system 224 may also consist of one or more systems relating to customer service, including billing, CRM, provisioning, and others.   The host information management system 226 controls

interactions between the mobile device and the host customer support system. The host information management system 226 can transmit updates to the mobile device. The mobile device typically employs a unique handset ID or serial number, and a mobile phone number. The report data 230 provides storage for report information gathered from the mobile device. The updated scripts 228 consist of scripts that the host customer support system provides to the mobile device. The updated scripts 228 can be managed and versioned as desired by the host information management system 226, can be targeted at specific subscribers or groups of subscribers, and can include requests for reports and customer interview surveys. Further details regarding customer self-support may be found in PCT Patent Application No. _____, entitled "Call Intercept Methods, such as for Customer Self-Support on a Mobile Device", assigned to the assignee of this application, and filed concurrently herewith.

Representative User Interface Displays and Techniques

[0033]   Starting with Figure 3, various representative user interface displays and techniques will now be described that allow a user to readily access desired functions and to receive information. Beginning in block 301, the mobile device displays to the user a user interface, such as those described below. In block 302, the mobile device determines whether user input has been received, and if so performs the desired or selected operation (block 303). The desired operation may in turn cause another user interface to be displayed.

[0034]   If a subscriber selects an option to change the display appearance on the mobile device (block 304), then the mobile device provides the subscriber with options to alter the appearance of the display (e.g., brand name, shading layers, multiple time zones, status of mobile device, status of network, etc. – block 305). This is one example of facilitating user configuration of the device – many others are possible.

[0035]   The mobile device may also check to see if new or updated information is available for the mobile device (block 306). For example, information can refer to scripts or other software executables that can be downloaded from the network to the mobile device. If new information is available, then the mobile device downloads and installs the information (block 308). If new information is not available, then the phone proceeds to receiving and processing a dialed number once again.

[0036]   Changing the display appearance on the mobile device may include superimposing branding on the mobile device's wallpaper, displaying two time zones when the mobile device recognizes transition to a new time zone, and others, as described below. For example, in response to accessing customer care, the mobile device can display a ticker across the top of the screen that says, e.g.: "Welcome to customer care: the average wait time is five minutes. You may now look at the screen below to help resolve problems or answer questions more quickly." The message may pertain to the wait time to connect to a call center, may prompt the subscriber to look at the bottom portion of the screen to resolve questions locally, or others. In addition, the mobile device may display dynamic information regarding phone status, network status, the wait time for connecting to a call center, and others. Figure 4 is a diagram illustrating mobile device screen features that allow for superimposing branding onto background images and for displaying multiple time zones. A subscriber or network service provider may superimpose branding 406 dynamically onto a mobile device display 404 located within a screen 402, continuously, or only during certain modes (e.g. sleep mode). The mobile device may also display multiple time zones 408 in certain instances, such as when the mobile device recognizes a transition to a new time zone, as shown at the top of the screen 402.

[0037]   In general, the screen displays of Figure 4 and other Figures represent phone or computer displays, or web pages, or other interfaces for performing certain tasks described herein. While certain ways of displaying information to, and receiving input from, users is shown and described with respect to certain Figures, those skilled in the relevant art will recognize that various other alternatives may be employed. The screens provide facilities to receive input data or display output data, and can include forms with field(s) to be filled in, menu selections, pull-down or drop-down menus or entries allowing one or more of several options to be selected, buttons, sliders, hypertext links or other known user interface tools for receiving user input. The terms "screen," "web page" and "page" are generally used interchangeably herein.

[0038]   The screens may be stored as display descriptions, graphical user interfaces, or other methods of depicting information on a computer screen (e.g., commands, links, fonts, colors, layout, sizes and relative positions, and the like), where the layout and information or content to be displayed on the page is stored in a

database. In general, a "link" refers to any resource locator identifying a resource on a network, such as a display description provided by an organization having a site or node on the network. A "display description," as generally used herein, refers to any method of automatically displaying information on a computer screen in any of the above-noted formats, as well as other formats, such as email or character/code-based formats, algorithm-based formats (e.g., vector generated), Flash format, or matrix or bit-mapped formats.

[0039]   Figure 5A illustrates a mobile device screen feature that allows the mobile device to display a dynamic list of user interface features. A mobile device 100 may display a series of user interface features or icons 501 on a mobile device display 404 located within a screen 402. The user interface features 501 may include features relating to ring tones, call registers, cameras, mobile device settings, and others. Selecting a specific user interface feature (e.g., camera) may display a new screen that allows the subscriber to access options regarding that particular feature. Also, once the user touches a button on the mobile device, the device may display the full set of icons 501 shown in the screen 402. Alternatively, software on the mobile device may cause only show a few icons, such as those at the bottom of the screen when the user attempts to scroll down.

[0040]   Figure 5B illustrates a mobile device screen feature that allows the mobile device 100 to display an overlay pane 504 in response to certain events. Certain events, such as a new e-mail or SMS (Short Message Service), can activate or cause the pane 504 to be displayed. The pane 504 may allow the subscriber to view new information and may make the information stand out from the background. Highlighting or the use of color shading can be used to make the pane 504 stand out from the background.

Automatic Data Display and Device Configuration

[0041]   The service provider may provide different levels of service to different groups of subscribers. For example, Figures 6A, 6B, and 6C show examples of display screens provided to a basic customer, a high average revenue per unit (ARPU) customer, and an enterprise customer, respectively. With the example of Figure 6A, the service provider can control the experience provided to the subscriber. As shown

in an upper portion 602 of the screen of Figure 6A, the user's name "Marie Pascal" and associated phone number are displayed, along with certain components of her wireless service, such as current balance, expiration date of purchased minutes, last time minutes were topped up, number of minutes used, and number of messages used. A lower portion 604 provides some common functions the subscriber may wish to perform, such as topping up a number of minutes now, accessing games or other desirable subscriber features (such as ring tones), an entry point into a series of help options, as well as an opportunity to purchase offerings from the service provider.

[0042]   Under a mezzanine level of service (depicted in Figure 6B), the service provider can enhance the high ARPU subscriber experience by providing premium service access, with integrated vendor support. Call backs can be scheduled from a customer service call center, and any service calls can be automatically routed to a premium support group or to a head of any queue. An upper screen portion 606 depicts a chart showing used and allowed voice minutes, SMS messages, and kilobytes of data, while a lower portion 608 depicts options for such a premium subscriber to access his or her billing records, to automatically speak to a premium customer support representative, to access concierge services, as well as to view upcoming events for premium subscribers.

[0043]   Figure 6C extends subscriber experiences to enterprise customers by allowing enterprise customers to have customized offerings and to allow for enterprise applications and vendor support. Enterprise specific services may be provided along with integration to the enterprise's help desk. As shown in Figure 6C, an upper portion 610 indicates certain enterprise functionality as being enabled, in this case, that Call Forwarding is on. A middle portion 612 allows the enterprise subscriber to configure data to services, configure voice options, access a list of help or "teach me how" topics, and access a menu of item/services to purchase. A lower portion 614 provides the enterprise subscriber with e-mail, voice mail, and data service support. Thus, the middle portion 612 of the screen is carrier related, while and the lower portion 614 is enterprise related (e.g., telling a subscriber how to implement voicemail).

[0044]   Overall, data displayed in the screens of Figures 6A-6C may be refreshed automatically by the network system so there is no need for the subscriber to call

customer care or access a specific network site. If, however, the subscriber does call customer care, then the mobile device may forward relevant data automatically to the call center, and connect to a relevant group such as premium call services, advanced technical services, or a billing department. An audio announcement may be played initially so that the subscriber perceives an immediate response.

[0045]   Figures 7A-7C illustrate additional examples of mobile device screen displays communicating automated updates to a subscriber. As shown in Figure 7A, an upper portion 702 of the mobile device display 404 displays a name of a service provider "Vector Mobile," but as the mobile device roams across a network boundary, software on the mobile device receives messages from a new network. As the mobile device receives registration messages from a new network service provider, "MarquisCom," the device registers for voice service on the new network, and displays the name of the new network in the upper portion, as shown at 704 of Figure 7B. Further, the phone automatically establishes a correct access point name (APN) from preferred roaming partners of the subscriber's service provider, and the subscriber can continue to access data applications. The mobile device may automatically offer to change local clock time, add proper country codes to phone numbers in the mobile device's address book/speed dial list, and so forth, as shown in Figure 7C. Overall, scripts running on the mobile device not only detect network availability and status, but also device settings and configuration to automatically react to application errors. In this manner, the mobile device may capture subscriber activities and create standardized, scriptable functions that can be combined to create a context-sensitive service.

[0046]   Figure 8 illustrates the mobile device performing active diagnostic monitoring of the device itself, via an appropriate script or mobile device application to monitor a change in network availability and status. The device application on the subscriber's mobile device can automatically monitor device settings, configurations, network availability, and network status. In the example of Figure 8, the mobile device has roamed outside of a video service area, and thus the subscriber cannot send or receive videos. However, the mobile device provides notice to the subscriber indicating that voice calls, text messages, and many other lower bandwidth applications are still available. The mobile device application displays an instructive

dialog 802 on the display 404. Such a helpful message to the subscriber can avoid costly calls to the support center when users may have attempted to send or receive videos outside the service area.

[0047]   When a mobile device enters a new network, the mobile device may automatically re-configure the network settings to allow a successful connection to a newly entered network and to automatically re-configure aspects of the mobile device. Figure 9 illustrates a method for locally selecting a network access configuration based on a network ID. This method allows for the selection of network access configuration settings based on a cell tower ID or wireless access point identifier, and allows for correct connection to a newly entered network. This method takes advantage of the fact that mobile operators transmit their unique carrier identification as part of the GSM - (Global System for Mobile Communications) network protocol, and similar protocols are being deployed for other networks for improved network roaming. Many network operators are not interconnected and as such do not allow subscribers to roam correctly; subscriber intervention is required to make data services on their mobile devices to work properly   Embodiments of the invention can select the correct configuration based on the network ID and lookup the correct setting in a local database located on the mobile device itself. Network ID's may include a country code, a carrier ID, and a cell-tower ID that is available for use as a database lookup key.

[0048]   Figure 9 illustrates three methods for initially retrieving the network ID for the mobile device: retrieving a network ID from a local information database in the mobile device (block 902 - method 1); detecting a change in the network connection (block 904) and retrieving the network ID from the database (block 906 - method 2); or detecting new information and determining from this information that the network connection has changed (block 908 - method 3), or others.

[0049]   Once the network ID associated with the mobile device has been determined, the mobile device determines locally if the device is still connected to the same network ID or if the device has changed network ID (block 910). If the mobile device is still connected to the same network ID, then the mobile device continues to use the existing network settings (block 912). If the mobile device is connected to a

different network ID, then the mobile device queries the local database based on the new network ID (block 914). The mobile device may access a configuration settings database stored on the mobile device to automatically change settings on the device. (block 916). The mobile device may also remotely retrieve from the network updated network IDs (and configuration settings) (block 918) to update the locally stored configuration settings database.

[0050]   After looking up the network ID in the database (block 914), the mobile device may verify if new network configuration settings are available locally on the mobile device based on the network ID (block 920). If the new network configuration settings are not available locally on the mobile device, then the subscriber may receive a message from the mobile device indicating that new settings are not available (block 922), and the mobile device continues to use the existing settings (block 924). However, if new network configuration settings are available locally on the mobile device, then the mobile device may automatically change the network settings and configuration (block 926), and the user may then continue normal use of the mobile device (block 928). Thus the local database stored on the mobile device includes configuration settings associated with multiple network IDs. The mobile device retrieves new configuration settings based on newly received network IDs and automatically changes or updates settings on the mobile device based on the new configuration settings retrieved from the local database. In an alternative embodiment, the mobile device may retrieve network configuration settings from the network, and not store any locally.

User Input Techniques

[0051]   Various methods for navigating data screens or performing desired functions on a mobile or remote device will now be described. Figure 10 illustrates a technique that allows a user of the mobile device to easily navigate to desired functions or icons, or between screens, with one hand, which can be particularly useful with smartphones or phones lacking touch screens. As shown in Figure 10, the mobile device displays a function window portion or "action ribbon" 1002 for navigating data screens. The action ribbon 1002 (shown in the dashed box) may be located anywhere on the display 404 and may span the entire screen width or height. For example, a

subscriber may use the standard input buttons on the mobile device, such as a joystick/4-way-pad (physical buttons on the device) to navigate or scroll vertically or out of "focus" of the active ribbon portion and to it, access or modify other regions on the screen. If the subscriber navigates into the action ribbon 1002, then the right and left joystick/4-way-pad (physical buttons on the device) may be used to move in the left or right direction to select or indicate an icon in the active ribbon. The user they then the actuate a center "action" button or switch on the joystick/4-way-pad to select or activate the indicated icon.

[0052]   In the example depicted in Figure 10, the action ribbon includes four icons associated with four common functions in an electronic mail ("email") application, although use with other applications are possible, such as electronic messaging, word processing, spreadsheet, calculator, contacts, or calendaring applications. The subscriber may select one of the action icons 1004 to activate a selected function, which is here to "reply all" to an email. Other depicted icons 1006, 1010 and 1008 correspond to delete, reply and forward functions, respectively.

[0053]   The mobile device may assist the subscriber in selecting the same functionality as they navigate to multiple screens ("sticky icons"). For example, if the subscriber indicates or highlights the "X" icon 1006 and selects or presses the center action button to select that icon and delete the current item, then the next item displayed (e.g. in a next screen) would be displayed with the 'X' icon 1006 already highlighted. This is opposed to the usual practice of having the default icon selected when one file is deleted, but then displaying the next screen with no icon or function highlighted or "queued up." In this manner, icons can be automatically selected to speed up navigation by reducing the number of keystrokes required for common navigation. The currently highlighted icon may be indicated by a distinguishing color, such as light blue. In an alternate embodiment, if a particular icon is highlighted (e.g., the left hand X icon 1006), then selecting a left button on the joystick/4-way-pad would be defined to have the equivalent function of the center action button. This may allow the subscriber to more easily perform repetitive functions, such as executing multiple "back" operations to go back to a previous screen, or to delete a series of consecutive emails.

[0054]   Figure 11 illustrates a mobile handset with a built-in customer care button or menu option. A customer care button or menu option allows the mobile device subscriber to access customer support without having to remember a customer support number, such as "611." In addition, a customer care button or menu option allows the subscriber to have faster access to customer support.

[0055]   Figure 11 illustrates three methods for initiating customer support service. In one embodiment, a dedicated or special purpose customer care button is provided on the mobile device to perform a specific function, namely accessing customer care or related functions. As shown, three different mobile devices 1102, 1104, and 1106 each have a dedicated customer care button, but the button is located respectively on the front, top, and side of the devices.

[0056]   In an alternative embodiment, an existing special purpose button or key on the mobile device may have a second mode when it is pressed and held, so as to launch and display a menu that includes one or more customer care options. For example, by pressing and holding a power button on a mobile device 1108, the button may perform a different function, namely causing a menu to be displayed that allows subscribers to select one or more customer care menu items or to simply place a customer care call/launch customer help functionality. In a third embodiment, a common button (e.g., number key) that normally performs non-customer care functions may be used to perform customer care functions (mobile device 1110). One method for initiating this dual function would be to press and hold the common button, such as pressing and holding the "0" button.

Conclusion

[0057]   Unless the context clearly requires otherwise, throughout the description and the claims, the words "comprise," "comprising," and the like are to be construed in an inclusive sense, as opposed to an exclusive or exhaustive sense; that is to say, in the sense of "including, but not limited to." As used herein, the terms "connected," "coupled," or any variant thereof, means any connection or coupling, either direct or indirect, between two or more elements; the coupling of connection between the elements can be physical, logical, or a combination thereof. Additionally, the words "herein," "above," "below," and words of similar import, when used in this application,

shall refer to this application as a whole and not to any particular portions of this application. Where the context permits, words in the above Detailed Description using the singular or plural number may also include the plural or singular number respectively. The word "or," in reference to a list of two or more items, covers all of the following interpretations of the word: any of the items in the list, all of the items in the list, and any combination of the items in the list.

[0058]   The above detailed description of embodiments of the invention is not intended to be exhaustive or to limit the invention to the precise form disclosed above. While specific embodiments of, and examples for, the invention are described above for illustrative purposes, various equivalent modifications are possible within the scope of the invention, as those skilled in the relevant art will recognize. For example, while processes or blocks are presented in a given order, alternative embodiments may perform routines having steps, or employ systems having blocks, in a different order, and some processes or blocks may be deleted, moved, added, subdivided, combined, and/or modified. Each of these processes or blocks may be implemented in a variety of different ways. Also, while processes or blocks are at times shown as being performed in series, these processes or blocks may instead be performed in parallel, or may be performed at different times.

[0059]   The teachings of the invention provided herein can be applied to other systems, not necessarily the system described above. The elements and acts of the various embodiments described above can be combined to provide further embodiments.

[0060]   All of the above patents and applications and other references, including any that may be listed in accompanying filing papers, are incorporated herein by reference. Aspects of the invention can be modified, if necessary, to employ the systems, functions, and concepts of the various references described above to provide yet further embodiments of the invention.

[0061]   These and other changes can be made to the invention in light of the above Detailed Description. While the above description details certain embodiments of the invention and describes the best mode contemplated, no matter how detailed the above appears in text, the invention can be practiced in many ways. Details of the

-17-

local-based support system may vary considerably in its implementation details, while still being encompassed by the invention disclosed herein. As noted above, particular terminology used when describing certain features or aspects of the invention should not be taken to imply that the terminology is being redefined herein to be restricted to any specific characteristics, features, or aspects of the invention with which that terminology is associated. In general, the terms used in the following claims should not be construed to limit the invention to the specific embodiments disclosed in the specification, unless the above Detailed Description section explicitly defines such terms. Accordingly, the actual scope of the invention encompasses not only the disclosed embodiments, but also all equivalent ways of practicing or implementing the invention under the claims.

[0062]   While certain aspects of the invention are presented below in certain claim forms, the inventors contemplate the various aspects of the invention in any number of claim forms. For example, while only one aspect of the invention is recited as embodied in a computer-readable medium, other aspects may likewise be embodied in a computer-readable medium. Accordingly, the inventors reserve the right to add additional claims after filing the application to pursue such additional claim forms for other aspects of the invention.